

PACIFIC PROPERTY  
NW $\frac{1}{4}$ , SW $\frac{1}{4}$ , SE $\frac{1}{4}$ , Sec. 13, T 6S, R 98W

HOLE NO. PAC - 2

DATE DRILLED 11/7/80 - 11/11/80

COORDINATES 629,857.6 NORTH 1,216,922.7 EAST

SURFACE ELEVATION 7,819.0 FEET

TOTAL DEPTH 602 FEET

CORED INTERVAL 360 - 602 FEET

LENGTH AND DIAMETER OF SURFACE CASING 20' x 6 5/8"

SIZE OF CORE 3 INCHES

CONTACT UINIA FORMATION - GREEN RIVER FORMATION 40 FEET

<u>KEY BEDS</u>	<u>DEPTH</u>	<u>ELEVATION</u>	<u>ELEVATION RELATIVE TO MM</u>
UPPER WAVY BED (BASE)	<u>438.8</u>	<u>7,380.2</u>	<u>+ 70.8</u>
A-GROOVE (BASE)	<u>490.5</u>	<u>7,328.5</u>	<u>+ 19.1</u>
MAHOGANY MARKER (TOP)	<u>509.6</u>	<u>7,309.4</u>	<u>0</u>
B-GROOVE (TOP)	<u>588.0</u>	<u>7,231.0</u>	<u>- 78.4</u>

## CLEVELAND — CLIFFS

1/11

HOLE NO. 2		PROJECT: Pacific Property				
RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P P	JOINT	SLICK	C. I.	
↑	360					360.00' to 362.17' Oil shale, low grade, pale yellow brown with thin laminations of moderate yellow brown
#1	361					
RQD 99	362					362.17' to 363.73' Oil shale, medium grade, dark yellow brown with thin laminations of dusky yellow brown.
	363				.74	363.73' to 364.35' Oil shale, medium grade, dark yellow brown.
	364					364.35' to 368.54' Oil shale, low grade, moderate yellow brown with dark yellow brown laminations, calcareous.
	365				.02 .68	
	366					
	367				.77	
	368					368.54' to 370.18' Oil shale, medium grade, dark yellow brown with dusky yellow brown laminations, calcareous, 369.27' - tuff lenses.
	369					
	370				.25	370.18' to 376.85' Oil shale, low grade, pale yellow brown with thin dark yellow brown laminations, calcareous.
	371					
	372					
	373					
	374					
	375				.08	376.22' - Tuff lens 376.85' to 376.92' Oil shale, medium grade, dusky yellow brown.
	376				.63	376.92' to 379.88' Oil shale, low grade, moderate yellow brown with thin pale yellow brown laminations.
	377					377.91' - Tuff lens 379.13' to 379.18' Tuff band 379.62' to 379.68' Nahcolite lens
	378				.43	379.88' to 383.00' Oil shale, medium grade, moderate yellow brown with thin dusky yellow brown laminations, calcareous.
38	379				.13 .73 .88	
#2 RQD 100	380					
.51 *	381				.51	
#3	382					
RQD 99	383					383.00' to 385.00' Oil shale, medium grade, dark yellow brown with thin dusky yellow brown laminations.

## CLEVELAND — CLIFFS-

2/11

HOLE NO. 2						PROJECT: Pacific Property
RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P. P.	JOINT	SLICK	C. I.	
	384				.69	384.62' to 384.69' Tuff Lens
	385					385.00' to 387.40' Oil shale, medium grade, thinly laminated dark yellow brown.
	386					
	387					387.40 to 389.32' Oil shale, low grade, moderate yellow brown.
	388				.47 .94	388.42' to 388.52' Unidentified white mineral.
	389					389.32' to 389.53' Oil shale, medium grade, thinly laminated dark yellow brown.
	390				.23	389.53' to 390.20' Oil shale, low grade, moderate yellow brown with thin dark yellow brown laminations.
	391					389.74' - Nahcolite
	392					390.20' to 391.42' Oil shale, medium grade, dark yellow brown with thin dusky yellow brown laminations.
	393				.23 .46	391.42' to 391.92' Oil shale, medium grade, dark yellow brown, calcareous.
	394				.22	391.92' to 399.56' Oil shale, low grade, pale yellow brown with thin moderate yellow brown laminations, calcareous.
	395				.72	393.46'-393.59' and 393.73'-393.78' - lenses moderate brown, leached marlstone.
	396				.20	
	397				.80	
	398					
.56 X	399				.56	399.56' to 403.00' Oil shale, low grade, moderate yellow brown with thin dark yellow brown laminations, calcareous.
#4	400					
RQD 100	401				.20	
	402					
	403				.07	403.00' to 404.65' Oil shale, medium grade, moderate yellow brown and dark yellow brown with thin dusky yellow brown laminations, calcareous.
	404				.64	404.65' to 415.90' Oil shale, medium grade, moderate yellow brown with thin dark yellow brown laminations, calcareous.
	405					405.25' - 405.28' Tuff lens
	406				.16	
	407				.31	

## CLEVELAND — CLIFFS

3/11

		HOLE NO. 2		PROJECT: Pacific Property		
RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P P	JOINT	SLICK	C. I.	
	408					408.47' Tuff lens
	409				.75	408.83' Tuff lens 409.36' Tuff lens
	410					
	411				.45	411.45' Tuff band
	412					
	413				.67	413.68' Tuff band 413.91' Tuff band
	414					
.90	415				.45	415.53' - 415.65' Tuff lens
*					.90	415.45' Leached zone along fractured plane.
#5	416					415.90' to 419.54 Oil shale, low grade, moderate yellow brown with thin dark yellow brown laminations, calcareous.
RQD 96	417					
	418					
	419				.54	419.54' to 422.55' Oil shale, medium grade, moderate yellow brown, calcareous.
	420					419.50' to 419.59' Tuff bed 419.76' to 419.82' Tuff bed
	421					
	422				.55	422.55' to 422.65' Oil shale, medium grade, dark yellow brown.
					.65	422.65' to 423.73' Oil shale, medium grade, moderate yellow brown and dark yellow brown with thin dusky yellow brown laminations, calcareous.
	423					423.73' to 425.00' Oil shale, medium grade, moderate yellow brown with thin dark yellow brown laminations, calcareous.
	424					
	425					
	426				.75	425.00' to 427.00' Oil shale, low grade, pale yellow brown, calcareous.
					.95	
	427				.10	427.00' to 427.15' Tuff, grayish orange, tuff is at an angle to bedding plane.
					.75	
	428				.55	427.15' to 428.00' Oil shale, low grade, pale yellow brown, calcareous.
	429					428.00' to 429.00' Oil shale, low grade, moderate yellow brown, calcareous.
	430					429.00' to 431.00' Oil shale, medium grade, moderate yellow brown with thin dark yellow brown laminations.
	431					431.00' to 435.05' Oil shale, low grade, thinly laminated, moderate yellow brown, calcareous.

## CLEVELAND — CLIFFS -

4/11

HOLE NO. 2

PROJECT: Pacific Property

RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P P	JOINT	SLICK	C. I.	
	432					
	433					
	434				.23 .32 .62	
.05 *	435				.05	435.05' to 436.87' Oil shale, medium grade, moderate yellow brown with thin dusky yellow brown laminations.
#6	436					436.87' to 438.80' Wavy bed, tuffaceous with sandy texture, contorted due to soft sediment deformation, light to medium gray.
RQD 98	437				.04 .41	438.80' to 440.00' Oil shale, low grade, moderate yellow brown with thin dark yellow brown laminations.
	438				.54 .80	
	439				.57	440.00' to 447.00' Oil shale, low grade, moderate yellow brown with dark yellow brown laminations, calcareous.
	440				.38	
	441					
	442					
	443					
	444					
	445					
	446					447.00' to 449.00' Oil shale, medium grade, moderate yellow brown with thin dark yellow brown laminations.
	447					
	448					449.00' to 450.45' Oil shale, low grade, moderate yellow brown.
	449				.44	450.45' to 456.93' - Oil shale, low grade, thinly laminated, moderate yellow brown, calcareous.
	450					
.45 *	451				.45	
#7	452					
RQD 100	453					
	454					
	455				.96	

## CLEVELAND — CLIFFS.

5/11

		HOLE NO. 2	PROJECT: Pacific Property			
RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P. P.	JOINT	SLICK	C. I.	
	456					456.93' to 460.08' Oil shale, low grade, grayish orange and moderate yellow brown, calcareous.
	457				.80	
	458				.60	
	459					460.08' to 461.00' Oil shale, low grade, pale yellow brown with medium bands of dark yellow brown.
.08 *	460				.08	
#8	461					461.00' to 462.60' Oil shale, low to medium grade, pale yellow brown and moderate yellow brown with bands of dark yellow brown.
RQD 97	462				.75	462.60' to 463.60' Oil shale, low to medium grade, moderate yellow brown and dark yellow brown with thin laminations and medium bands dusky yellow brown.
	463					463.60' to 465.60' Oil shale, low grade, pale yellow brown.
	464					465.60' to 468.18' Oil shale, medium to high grade dark yellow brown with thin dusky yellow brown laminations.
	465					
	466					468.18' to 470.00' Oil shale, low grade, pale yellow brown with minor medium laminations of very pale orange, calcareous.
	467					
	468				.63	470.00' to 473.75' Oil shale, low grade, pale yellow brown with minor moderate yellow brown
	469					
	470					473.75' to 474.37' Oil shale, high, thinly laminated dark and dusky yellow brown.
	471					
	472					474.37' to 476.00' Oil shale, low grade, pale yellow brown with medium bands moderate yellow brown.
	473					476.00' to 476.90' Oil shale, very low grade, very pale orange.
	474				.09	476.90' to 477.80' Oil shale, high grade, dark and moderate yellow brown with thin dusky yellow brown laminations.
	475					477.80' to 479.27' Oil shale, low grade, pale yellow brown with minor very pale orange.
	476				.62	479.27' to 481.00' Oil shale, very low grade, very pale orange, top of A-Groove.
	477				.38	
	478	.75			.75	
	479	.27 .32			.71 .91	

## CLEVELAND — CLIFFS —

6/11

HOLE NO. 2		PROJECT: Pacific Property				
RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P.P.	JOINT	SLICK	C.I.	
.18 *	480				.18	480.18' to 481.78' Biscuit zone, numerous fractures along parting planes.
#9	481		.78			481.00' to 482.00' Oil shale, low grade, pale yellow brown.
RQD 90	482	.20, .29 .43, .60				482.00' to 483.00' Oil shale, very low grade, very pale orange with minor pale yellow brown.
	483				.28	483.00' to 485.69' Oil shale, low grade, pale and moderate yellow brown with thin bands of dark yellow brown.
	484	.63 .09 .19			.90	483.63' - White altered (?) mineralization in leached zone.
	485		.21 .69		.21 .69	484.09' to 484.19' Pale brown mineralization
	486				.51	485.69' to 488.70' Oil shale, very low grade, very pale orange, calcareous.
	487				.71	488.70' to 490.45' Oil shale, low grade, pale yellow brown and very pale orange, minor moderate yellow brown.
	488					490.45' to 491.55' Oil shale, low medium grade, moderate yellow brown with minor dark yellow brown, bottom of A-Groove.
	489				.18 .67	491.55' to 492.18' Oil shale, medium to high grade, dark yellow brown with minor moderate yellow brown thin laminations.
	490				.45	492.18' to 492.75' Oil shale, low grade, pale yellow brown and very pale orange thin laminations.
	491					492.75' to 495.00' Oil shale, low grade, pale yellow brown.
	492				.39	493.20' - Alteration mineralization, minor nahcolite, calcite.
	493				.20	495.00' to 496.00' Oil shale, low to medium grade, wavy bedding and irregular laminations of pale and dark yellow brown.
	494				.48	496.00' to 496.50' Oil shale, medium grade, dark yellow brown.
	495	.09			.09	496.50' to 497.70' Oil shale, high grade, thinly laminated, dusky yellow brown.
	496				.49 .83	496.54'-496.76' Pale yellow brown (wavy) tuff.
	497	.69			.69	497.16'-497.46' Pale yellow brown (wavy) tuff.
	498				.75	497.70' to 498.24' Oil shale, medium to high, dark yellow brown with thin dusky yellow brown laminations.
	499				.47	498.24' to 500.47' Oil shale, low to medium grade, pale yellow brown with minor dark yellow brown laminations.
.26 *	500	.41			.18 .26 .41	500.47' to 501.90' Oil shale, medium to high grade, dark and dusky thin laminations.
#10	501					501.45' & 501.61'-White tuff lenses
RQD 99	502					501.90' to 506.00' Oil shale, low to medium grade, pale and dark yellow brown, thin laminations.
	503					502.20' - White tuff lens

## CLEVELAND — CLIFFS

7/11

HOLE NO. 2		PROJECT: Pacific Property				
RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P P	JOINT	SLICK	C. I.	
	504				.81	
	505					
	506					506.00' to 509.55' Oil shale, medium grade, pale and moderate yellow brown, medium banded with minor thinly laminated dark yellow brown, calcareous.
	507					
	508				.94	
	509				.78	509.55' to 510.04' Mahogany Marker, medium light gray siliceous tuff with sandy texture.
	510					510.04' to 513.35' Oil shale, low grade, pale and moderate yellow brown, calcareous.
	511					513.07'-513.13' Tuff, medium gray, vuggy.
	512				.03	
.57 X	513	.12		Broken	.53 .57 .78	513.35' to 514.20' Oil shale, high grade, thin laminations of dusky yellow brown.
#11	514					514.20' to 515.00' Oil shale, medium to low grade, pale and moderate yellow brown with dark yellow brown, thin laminations.
RQD 97	515					515.00' to 517.20' Oil shale, low grade, pale and moderate yellow brown with some dark yellow brown laminations.
	516					517.20' to 517.70' Oil shale, medium grade, moderate and dark yellow brown.
	517				.20	517.70' to 518.00' Oil shale, low to medium grade, pale, moderate and dark yellow brown, thin laminations.
	518					518.00' to 519.17' Oil shale, high grade, dusky yellow brown, thin laminations.
	519					518.09' - Tuff bed
	520	.77 .95 00				519.17' to 519.62' Oil shale, medium grade, dark and moderate yellow brown.
	521					519.62' to 520.09' Oil shale, low to medium grade, pale yellow brown with dark yellow brown, thin laminations.
	522					520.09' to 521.88' Oil shale, medium grade, dark yellow brown, thin laminations.
	523					521.88' to 522.70' Oil shale, high grade, dusky yellow brown with thin pale yellow brown laminations.
	524					522.70' to 524.00' Oil shale, medium to high grade, dark and dusky yellow brown, thinly laminated.
	525					524.00' to 525.33' Oil shale, high grade, dusky yellow brown.
	526	00				525.33' to 525.83' Oil shale, low grade, pale and moderate yellow brown.
	527					525.83' to 527.52' Oil shale, high grade, dusky yellow brown with thin dark yellow brown laminations.



## CLEVELAND — CLIFFS-

8/11

07/11

HOLE NO. 2		PROJECT: Pacific Property				
RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P P	JOINT	SLICK	C. I.	
.67	528				.67	527.25' to 527.33' Tuff
*						527.52' to 529.30' Oil shale, low to medium grade, pale and moderate yellow brown.
#12	529					529.30' to 530.00' Oil shale, medium to high grade, dark yellow brown with thin dusky yellow brown laminations.
RQD 98	530					530.00' to 531.20' Oil shale, high grade, dusky yellow brown, thin laminations.
	531					531.20' to 534.50' Oil shale, low to medium grade, pale, moderate, and dark yellow brown.
	532				.18	534.50' to 535.20' Oil shale, high grade, dusky yellow brown.
	533				.79	535.20' to 535.85' Oil shale, medium to high grade, dark and dusky yellow brown.
	534				.15	
	535				.10	535.85' to 537.20' Oil shale, medium grade, dark yellow brown.
	536				.08	
	537				.06	537.20' to 538.20' Oil shale, high grade, dusky yellow brown, thinly laminated.
	538					538.20' to 539.90' Oil shale, low grade, pale and moderate yellow brown.
	539	.11			.11	539.90' to 540.80' Oil shale, medium to high grade, dark and dusky yellow brown, thinly laminated.
	540					540.80' to 543.35' Oil shale, low grade, pale and moderate yellow brown.
	541				.95	
	542				.75	
	543				.27	543.35' to 543.85' Oil shale, low to medium grade, pale and dark yellow brown, thin banded.
.56					.56	543.85' to 545.00' Oil shale, high grade, dusky yellow brown, thinly laminated.
#13	544					544.58' - Tuff (1/2") pale yellow brown, wavy bedded.
RQD 100	545				.52	544.76' - Tuff (1/2") pale yellow brown, wavy bedded.
	546				.02	545.00' to 546.00' Oil shale, low to medium grade, pale and moderate yellow brown.
	547					546.00' to 548.50' Oil shale, low grade, pale yellow brown.
	548					548.50' to 551.75' Oil shale, medium grade, thin laminations of moderate and dark yellow brown.
	549					
	550				.84	551.75' to 552.55' Oil shale, low to medium grade, pale and moderate yellow brown with medium laminations of dark yellow brown.
	551					

## CLEVELAND — CLIFFS

9/11

HOLE NO. 2						PROJECT: Pacific Property
RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P.P.	JOINT	SLICK	C. I.	
	552				.09	552.55' to 553.75' Oil shale, low grade, pale and dark yellow brown, thinly laminated.
	553					553.75' to 555.15' Oil shale, low to medium grade, moderate yellow brown with dark yellow brown, thin laminations.
	554					555.15' to 555.77' Oil shale, low grade, pale and dark yellow brown.
	555				.72	555.77' to 560.10' Oil shale, low grade, pale yellow brown with dark yellow brown thin laminations
	556				.47	560.10' to 560.95' Oil shale, medium grade, moderate and dark yellow brown.
	557					560.91' - Tuff, moderate yellow brown, 1/2"
	558					560.95' to 562.00' Oil shale, low grade, pale and moderate yellow brown.
	559	.36			.36	562.00' to 564.10' Oil shale, very low grade, pale yellow brown and very pale orange.
	560					564.10' to 564.42' Oil shale, low grade, pale and moderate yellow brown.
	561					564.42' to 565.09' Oil shale, low to medium grade, moderate yellow brown.
	562	.08			.08	564.87' to 564.93' Tuff band, moderate yellow brown.
	563	.00			.48	565.09' to 565.30' Oil shale, medium grade, dark and dusky yellow brown, thin laminations.
.48 X	564					565.30' to 567.59' Oil shale, low grade, pale and moderate yellow brown.
	565				.09	565.75', 566.11', 666.33' - Tuff, dark gray bands (1/4").
#14	566	.32			.32	567.59' to 567.87' Oil shale, medium grade, moderate with dark and dusky yellow brown laminations.
RQD 98	567					567.87' to 568.38' Oil shale, high grade, dusky yellow brown, very thin laminations.
	568				.05	568.38' to 568.70' Oil shale, medium grade, dark yellow brown.
	569				.66	568.70' to 569.66' Oil shale, low to medium grade, pale and moderate yellow brown with very thin medium light gray tuffaceous laminations.
	570					569.66' to 571.00' Oil shale, low grade, very pale orange and pale yellow brown with very thin medium light gray tuffaceous laminations.
	571					571.00' to 571.82' Oil shale, low to medium grade, pale and dusky yellow brown, medium laminations.
	572				.12	571.82' to 572.06' Oil shale, medium to high grade, moderate and dusky yellow brown, thin laminations.
	573					572.06' to 572.83' Oil shale, high grade, dusky yellow brown, very thinly laminated with some dark yellow brown.
	574				.32 .77	572.83' to 573.30' Oil shale, medium grade, moderate and dark yellow brown with dusky yellow brown, medium laminations.
	575	.15			.04 .15	573.30' to 574.32' Oil shale, low to medium grade, pale and moderate yellow brown, medium bands.
						574.32' to 575.60' Oil shale, very low grade, very pale orange and pale yellow brown in medium bands.

## CLEVELAND — CLIFFS

10/11

HOLE NO. 2

PROJECT: Pacific Property

RUN	DEPTH	FRACTURES				LITHOLOGIC DESCRIPTION
		P.P.	JOINT	SLICK	C. I.	
	576				.18	575.06' to 575.14' Tuff, dark yellow brown.
	577				.06	575.60' to 576.10' Oil shale, low to medium grade, pale and moderate yellow, medium banded.
	578				.05	576.10' to 576.55' Oil shale, medium grade, dark, pale, and dusky yellow brown, very thin laminations.
	579	.71				576.55' to 577.35' Oil shale, high grade, dusky yellow brown with thin irregular laminations and lenses of pale yellow brown.
	580					577.35' to 577.57' Oil shale, medium to high grade, dark and dusky yellow brown, thin laminations.
.55 X	581				.24	577.57' to 578.05' Tuff, moderate yellow brown.
					.55	578.05' to 578.90' Oil shale, low to medium grade, pale moderate yellow brown with dark yellow brown, medium bands.
#15	582					578.90' to 581.55' Oil shale, low grade, pale and moderate yellow brown with some thin dark yellow brown laminations.
RQD 91	583				.50	579.70' to 579.78' Tuff, pale yellow brown.
	584	.81			.01	581.55' to 583.10' Oil shale, low to medium grade, pale, moderate, and dark yellow brown, medium bands.
	585				.87	583.10' to 585.05' Oil shale, low grade, pale and dark yellow brown.
	586				.85	585.05' to 586.67' Oil shale, low grade, pale and moderate yellow brown, medium to thin banded, with very thin medium gray tuff bands (<1/4").
	587				.28	586.67' to 590.78' Oil shale, very low grade, very pale orange.
	588	.43			.93	587.75' to 587.85' Tuff, medium dark gray.
	589					589.45' to 589.62' Tuff, medium dark gray.
	590				.95	590.78' to 590.95' Oil shale, low to medium grade, moderate and pale yellow brown, medium banded.
	591					590.95' to 600.39' Marlstone, consistent light gray in color with very few bands, slightly calcareous non fissil
	592				.05	592.05' - Tuff, medium dark gray (1/4").
	593				.30	
	594	.57 .68				
	595				.39 .86	
	596	.55			.55 .97	
	597					
	598		.55 .99		.10	
	599	.39			.30 .39	

## 11/11

PROJECT: Pacific Property

[illegible]